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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,413

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Ulrich Bast

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EXAMINER

KATZ, VERA

ART UNIT

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1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,413	Applicant(s) BAST ET AL.	
	Examiner Vera Katz	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 16-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/12/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 19, 21, 23, 26, 27, 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of these claims recites a group which is an improper Markush group; see claims 19, 21, 23 line 3, claims 26-27 and 32-33, line 2. Claims 21, 32-33 recite "...mixed oxide selected from the perovskite group with the empirical formula $AA'O_3$ and/or a pyrochlore with the empirical formula $A_2B_2O_7$, where A' comprises a trivalent metal and B comprises a tetravalent metal". Claim 19 recites "an activator selected from the cerium and/or europium and/or dysprosium and/or terbium group". Claim 26 recites "the pyrochlore is selected from the rare earth hafnate and/or rare earth titanate and/or rare earth zirconate group". Claim 23 recites "...the trivalent metal A' comprises a rare earth element selected from the lanthanum and/or gadolinium and/or samarium group". Claim 27 recites "the rare earth zirconate is selected from the gadolinium zirconate and/or samarium zirconate group". The conjunctions and/or make the claims uncertain and indefinite.

Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. One acceptable form of alternative expression, which is commonly referred to as a Markush group, recites

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members as being “selected from the group consisting of A, B and C.” See *Ex parte Markush*, 1925 C.D. 126 (Comm’r Pat. 1925). It is improper to use the term “comprising” instead of “consisting of.” *Ex parte Dotter*, 12 USPQ 382 (Bd. App. 1931)., MPEP 2173.05(h).

Alternative expressions using “or” are acceptable such as “wherein R is A, B, C, or D.” these phrases were each held to be acceptable and not in violation of 35 USC, second paragraph in *re Gaubert*, 524F.2d 1222, 187 USPQ 664 (CCPA 1975); MPEP 2173.05(h).

2. Claims 21 and 32-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 21 and 32-33 recite the limitation "the empirical formula" in line 4, "the perovskite" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16-22 and 29-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Choy (EP 1105550, cited in IDS).

Considering claim 16, Choy teaches a layer of a thermally insulated material [0003], or a heat-insulation layer on a part of a combustion engine [0021] that is considered to be an arrangement. The part of the engine is considered to be a carrier body. The heat-insulation coating is a thermal barrier coating (TBC) that prevents heat transfer between the carrier body and a surrounding area of the carrier body. However, the recitation "for preventing heat transfer between the carrier body and a surrounding area of the carrier body" is considered an intended use. This aspect has not been given patentable weight, since the thermal barrier coatings per se are known and the reference sets forth the same composition as instantly claimed. Choy further teaches that the composition of the heat-insulation layer comprises a substance that has optical emission spectra [claim 1] and the substance generates a light at specific wavelength in response to a specific excitation wavelength; [0027 and 0038]. The aforementioned substance is considered the luminescent substance that emits a luminescent light at specific luminescence wavelength. Choy further discloses Figs 11 and 12 with an additional thermal barrier coating (TBC), 270 or 230 which is regarded as an additional heat-insulation layer. The reference further provides that the indicator material can form a part of the layer; [0016]. It also provided that the lower limit of the indicator range is 0.1% but the concentration can be also out of the limit; [0054]. It is regarded that by providing only a part of the TBC layer with the indicator or a concentration of the indicator at the lower limit of the range or outside the range makes the layer essentially luminescent –free. The reference teaches few embodiments wherein only a region of the additional heat-insulation layer 280 is substantially transparent; [0050]. The rest of

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the coating layer 270 or the entire coating layer 230 is considered to be essentially opaque to the excitation light.

Considering claim 17, as taught by the reference, the heat-insulation layer 210 or 250 is disposed between the carrier body 10 and the further heat-insulation layer 230 or 270. The luminescent light can reach the environment through features 240 or 290 in the additional heat-insulation layer, see Figs. 11 and 12.

Considering claims 18 -20 and 31, the reference teaches that the luminescent material comprises Y_2O_3 -Eu; [0037]. Y is a trivalent metal A of a metal oxide. Eu is considered to be an activator selected from europium group. The concentration of europium can be 6% that is within the applicant's claimed range of up to 10%; [0042].

Considering claims 21, 22 and 32-33, the metal oxide is a mixed oxide of a perovskite with a formula $AA'O_3$ where A' is a trivalent metal. The metal oxide comprises Eu which is a rare earth element.

Considering claims 29-30, Choy teaches that the carries body is a component of a combustion engine and the combustion engine comprises a gas turbine; [0021].

Claim Rejections - 35 USC §103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 23-25 are rejected under 35 U.S.C. 103(a) as obvious over Choy; [- EP 1105550, cited in IDS] in view of Heimberg (6440575).

Considering claim 23, as it was shown above, Choy teaches all the structural limitations of claims 16-22. Choy fails to teach a rare earth element selected from the lanthanum group or gadolinium group. However, Heimberg teaches a heat-insulation material comprising a mixed oxide of the perovskite group such as such as LaAlO_3 ; or LaGdAlO_3 [col. 4, line 19 and 53 and col. 5, line 65]. The empirical formula of the perovskite is $\text{AA}'\text{O}_3$, wherein La, Gd and Al are trivalent metals A or A'. La and Gd are rare earth elements Re from the lanthanum group and the gadolinium group, respectively.

It would have been obvious to one of ordinary skill in the art to modify the heat-insulating structural arrangement of Choy to include a trivalent metal comprising a rare earth selected from lanthanum or gadolinium group, because this composition would provide an expansion-tolerant microstructure and minimize thermal stress in the materials; [Heimberg, col. 2, lines 54-58].

Considering claim 24, LaAlO_3 ; or LaGdAlO_3 are rare earth aluminates.

Considering claim 25, Heimberg teaches the formula of the rare earth aluminate is $\text{Ga}_x \text{La}_{1-x} \text{AlO}_3$; [col. 4, line 54]. The claimed formula of $\text{Ga}_{0.25} \text{La}_{0.75} \text{AlO}_3$ is within the claimed range. Heimberg does not specifically teach the above recited formula, however, it would have been obvious to one of ordinary skill in the art that the range of x to be from 0 to 1, because if $x=0$, then the formula would be LaAlO_3 and if $x=1$, the formula would be GaAlO_3 . Both oxides above are binary oxides. If the oxide is a mixed

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ternary oxide as it is in the art, then x should fall between 0 and 1. Therefore, if x is equal to 0.25 then the empirical formula of mixed oxide is $\text{Ga}_{0.25}\text{La}_{0.75}\text{AlO}_3$ as in the instant claim 7.

Alternatively it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the point within the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, In re Malagari, 182 USPQ 549. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the formula to provide a chemically stable material; [col. 4, line 58].

5. Claims 21, 22-23 and 26-28 are rejected under 35 U.S.C. 103(a) as obvious over Choy; [-EP 1105550, cited in IDS] in view of Maloney (6284323).

Considering claims 21, as it was shown above, Choy teaches all the structural features of claims 17 -20, but is silent about mixed oxides selected from pyrochlore group. However, Maloney teaches a thermal insulating or thermal barrier material comprising a mixed oxide which is a pyrochlore with an empirical formula of $\text{A}_2\text{B}_2\text{O}_7$ where A comprises a trivalent metal and B comprises a tetravalent metal; [col.3, line 12]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat-insulating structural arrangement of Choy to include a mixed oxide comprising a pyrochlore of Maloney because Maloney clearly teaches that these pyrochlores have utility in the art of thermal barrier coatings are taught to be successfully used for protecting the underlying substrate. ; [Maloney, col. 3, line 2].

Considering claims 22 and 23, Maloney teaches that a trivalent metal A of the pyrochlore of the formula $A_2B_2O_7$ is a rare earth element Re selected from the lanthanum or gadolinium group; [col. 5, line 64 and col. 8, line 58].

Considering claims 26-28, the pyrochlore can be a rare earth hafnate, or rare earth titanate or zirconate; [Maloney, col. 6, lines 18, 53 and col. 8, line 2]. The rare earth zirconate is gadolinium; [Maloney, col. 6, lines 15-19]. The rare earth hafnate comprises lanthanum hafnate; [in situ].

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 16-33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/566980. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are not patentably

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distinct. For example, though instant claim 16 recites luminescent substance, while claim 13 of 10/566980 recites luminophore. The luminophore and luminescent material are considered to be equivalent in scope.

7. .

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, see attached form PTO-892.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vera Katz whose telephone number is (571)270-7082.

The examiner can normally be reached on M - Th 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JENNIFER McNEIL can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vera Katz/
Examiner, Art Unit 1794

/JENNIFER MCNEIL/
Supervisory Patent Examiner, Art Unit 1794

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